CLAIMS

1. A processor-readable medium comprising processor-executable instructions configured for:

scanning a reference pattern on a disc to create a table of coordinate data; and

calibrating the gain of a fine actuator based on the table of coordinate data.

2. A processor-readable medium as recited in claim 1, wherein the scanning comprises:

generating a reflective signal based on the reference pattern;

converting a duty cycle of the reflective signal into a radius value; and

recording the radius value and an associated DAC (digital to analog convert) count in the table.

3. A processor-readable medium as recited in claim 1, wherein the calibrating comprises:

performing a line fitting algorithm on the coordinate data to generate a best fit line; and

calibrating the gain of the actuator based on the slope of the best fit line.

4. A processor-readable medium as recited in claim 1, wherein the scanning comprises:

writing a number to a DAC (digital to analog converter);

driving a power amplifier with a DAC output voltage;

driving an actuator current with the power amplifier;

altering the number written to the DAC by a known amount n times;

for each number written to the DAC, calculating a radius from a duty cycle of a reflective signal generated from the reference pattern; and

recording into the table, each radius and each number written to the DAC.

5. A processor-readable medium as recited in claim 1, wherein the scanning comprises:

scanning a first half of the reference pattern;

calculating a first radius based on the first half of the reference pattern;

scanning a second half of the reference pattern;

calculating a second radius based on the second half of the reference pattern; and

averaging the first radius and the second radius to generate coordinate data.

6. A processor-readable medium as recited in claim 5, wherein the first half of the reference pattern and the second half of the reference pattern are 180 degrees apart from one another on the non-data side of the disc.

7. A processor-readable medium as recited in claim 1, wherein the reference pattern has a linear variation with the radius of the disc.

8. A processor-readable medium as recited in claim 1, wherein the reference pattern is a sawtooth reference pattern.

9. An optical disc read-write device comprising the processor-readable medium as recited in claim 1.

10. A processor-readable medium comprising processor-executable instructions configured for:

scanning a sawtooth pattern on a non-data side of an optical disc;

generating a reflective signal based on the scanning;

converting a duty cycle of the reflective signal into a radius value;

incrementing a DAC (digital to analog converter) count to a new DAC count;

repeating the scanning, the generating, and the converting; and

calculating a fine actuator gain based on the DAC counts and the radius values.

11. A processor-readable medium as recited in claim 10, comprising further processor-executable instructions configured for recording each DAC count and each radius into a table.

12. A processor-readable medium as recited in claim 10, wherein the calculating comprises:

configuring the DAC counts and the radius values as coordinate data; and

performing a line fitting algorithm on the coordinate data to generate a best fit line.

13. A processor-readable medium as recited in claim 12, wherein the calculating further comprises calibrating the fine actuator gain based on a slope of the best fit line.

14. An optical disc read-write device comprising the processor-readable medium as recited in claim 10.

15. A method for calibrating a fine actuator comprising:

generating a table of coordinate data by scanning a reference pattern on an optical disc; and

calibrating the gain of a fine actuator based on the table of coordinate data.

16. A method as recited in claim 15, wherein the generating comprises:

generating a reflective signal based on the scanning;

calculating a radius from a duty cycle of the reflective signal; and

recording the radius value and an associated DAC (digital to analog convert) count in the table.

17. A method as recited in claim 15, wherein the calibrating comprises:

fitting the coordinate data to a best fit line using a line fitting algorithm; and

calibrating the gain of the actuator based on the slope of the best fit line.

18. A method as recited in claim 15, wherein the generating comprises:

calculating a first radius based on scanning a first half of the reference pattern;

calculating a second radius based on scanning a second half of the reference pattern; and

averaging the first radius and the second radius to generate coordinate data.

19. A method as recited in claim 15, wherein the reference pattern is a sawtooth reference pattern.

20. A disc drive system comprising:

a scanner configured to read a reference pattern on an optical disc;

a fine actuator configured to control small radial movements of the scanner; and

a fine actuator driver configured to calibrate the fine actuator using the reference pattern.

21. A disc drive system as recited in claim 20, further comprising:

a processor configured to write a binary number to a DAC and increment the binary number in equal steps;

the DAC, configured to generate an output voltage for each binary number; and

a power amplifier configured to drive the fine actuator with current values based on each output voltage.

22. A disc drive system as recited in claim 21, further comprising:

a table of coordinate data including the binary numbers and a radius value calculated from the reference pattern for each binary number; and

a line fitting algorithm configured to generate a best fit line from the coordinate data and to determine the slope of the best fit line, wherein the slope represents the gain of the fine actuator.

23. An optical disc read-write device comprising the disc drive system as recited in claim 20.

24. A disc drive system comprising:

means for scanning a reference pattern on an optical disc;

means for generating a table of coordinate data based on the scanning; and

means for calibrating the gain of a fine actuator based on the coordinate data.

25. A disc drive system as recited in claim 24, wherein the means for scanning comprises means for generating a reflective signal representing the reference pattern.

26. A disc drive system as recited in claim 25, wherein the means for generating comprises:

means for calculating a radius from a duty cycle of the reflective signal; and

means for recording the radius value and an associated DAC (digital to analog convert) count in the table of coordinate data.

27. A disc drive system as recited in claim 24, wherein the means for calibrating comprises:

means for fitting the coordinate data to a best fit line using a line fitting algorithm; and

means for calibrating the gain of the actuator based on the slope of the best fit line.